NEASE CHEMICAL COMPANY

AIR SAMPLING

TDD#R5-8209-2

NEASE CHEMICAL

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October 26, 1982

INTRODUCTION

On October 26, 1982 the FIT team conducted ambient air sampling at Nease Chemical Company, located in Salem, Ohio. The purpose of this sampling was to determine the possibility and extent of fugitive air emissions. Resultant data was to be used in the Hazard Ranking System (HRS), and for possible use in determining levels of protection for on site work.

SAMPLING TECHNIQUES

Two (2) major categories of air samples were collected during this survey. On October 26, 1982 airborne pesticide samples, in the form of wind blown particulates, were collected. Particular emphasis during analysis was placed on detection of Mirex and Kepone. Field sampling techniques involved the use of personal air sampling pumps (DuPont P-4000) calibrated to draw three (3) liters per minute, through 37mm glass fiber filters. Pore size for these filters was five (5) micrometers. Flow rates were calibrated before sampling and rechecked at the end of the day.

Volatile organic vapors leaving the site, in the form of fugitive emissions, were collected on three (3) section absorbing tubes. Glass tubes packed with activated charcoal, tenax, and silica gel were utilized. The same DuPont sampling pumps were used to draw the air sample through these tubes. However, these pumps were operated in the low flow sampling mode, at a rate of 100 cubic centimeters per minute. By using a three (3) section collection media, a multitude of polar and non-polar compounds are capable of being collected.

ANALYTICAL TECHNIQUES

Mirex and Kepone samples were analyzed using gas chromatography with electron capture detector (GC-EC). Detection limits were noted to be 0.2 ug/m^3. Organic vapor analysis was completed by thermally desorbing the collection tubes, and analyzing by gas chromatography-mass spectrophotometry (GC-MS). Detection limits varied from 0.5 to 0.6 ug/m^3.

METEROLOGICAL DATA

Meterological Data for October 26, 1982

Wind Direction	:	High variable, predominantly northwest-north
Wind Speed	:	Calm in the early morning, increasing to 5 to 6 miles per hour (mph)
Temperature	:	40°F increasing to 66°F
Soil Temperature	:	Approximately 40°F
Sky Cover	:	Clear and sunny

Meterological Data for October 27, 1982

Wind Direction	:	Winds were extremely variable; from the southwest to the northwest.
Wind Speed	:	Winds were nearly calm, increasing to 2 to 3 miles per hour
Temperature	:	Starting at 36°F increasing to 64°F
Soil Temperature	:	Approximately 40°F
Sky Cover	:	Clear and sunny

DISCUSSION

Laboratory findings would indicate that no measureable amount of Mirex or Kepone is leaving the site in the form of wind blown particulates. No detectable concentrations were found in any of the samples. This is true for even the worst case or midsite sample. See Figure 1 for sample locations.

Laboratory findings would also indicate that very little, if any, volatile organics are leaving the site in the form of fugitive emissions. Typical chemicals found in downwind samples are saturated hydrocarbons and aldehydes. Unfortunately, similar compounds were found in the upwind sample. This would suggest that these trace chemicals would be indigenous to this area. A very small amount of perchloroethylene was found in the downwind samples. However, it is felt that this can be attributed to either sampling, or analytical error. Elevated levels of this chemical were noted to be in the blank. The worst case or midsite sample failed to show any significant elevation of organic vapors. The Organic Vapor Analyzer (OVA) and the HNU Photoionizer (10.2 eV and 11.7 eV probes) did not indicate any readings above background, anywhere on site. Downwind sample number 3-0 was noted to have 37 ppb acetone. See Figure #2 for sample locations. It is felt that the source of this contaminant was from onsite activities. During the day of the sampling, onsite soil borings were being taken. Drill augers and associated equipment were decontaminated with acetone.

It should be pointed out that certain important considerations should be made when reviewing this survey data.

Meterological conditions on the day of organic vapor sampling were less than ideal. Winds were highly variable, and were practically calm. Soil temperature was cool, and air temperatures were not that of a typical summer day. Therefore, meterological conditions were certainly not that of a worst case situation.

Laboratory findings and analytical techniques were criticized by Region V Central Regional Laboratory (CRL). They felt that the laboratory's procedures, or lack of procedures, made their results of questionable validity.

CONCLUSIONS

Survey results would suggest that no appreciable quantity of Mirex or Kepone pesticides are leaving the site in the form of airborne fugitive emissions. In addition, no significant amount of volatile organic vapors are leaving the site. However, because of less than ideal meterological conditions, and possible laboratory failures, conclusive and positive confirmation should be reserved. It would seem prudent to consider reevaluation of the site during the warmer summer months, and have the resultant samples analyzed by a laboratory that meets CRL's requirements.

DW/pj

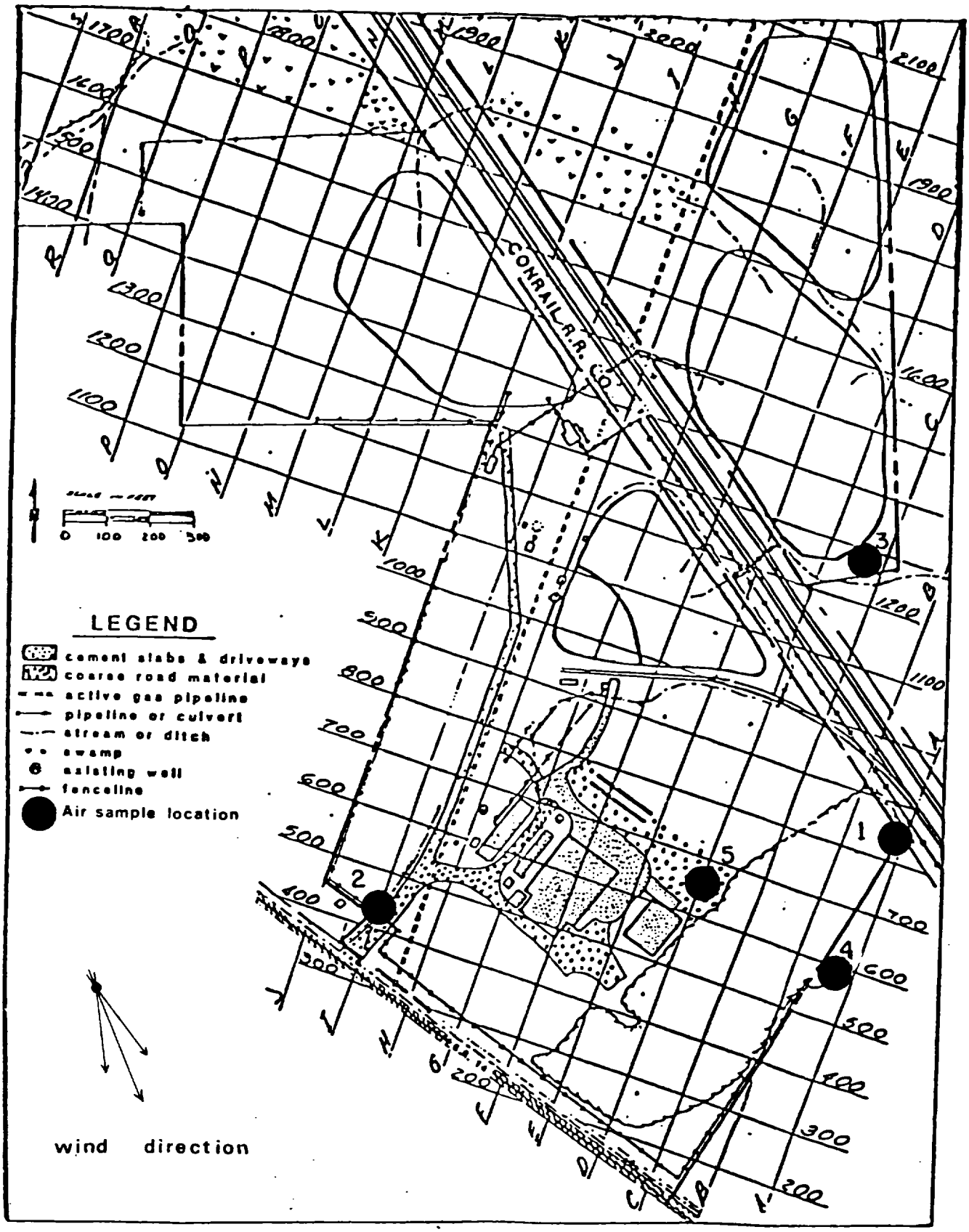

FIGURE 1

MIREX / KEPONE SAMPLE LOCATIONS 10/26/82

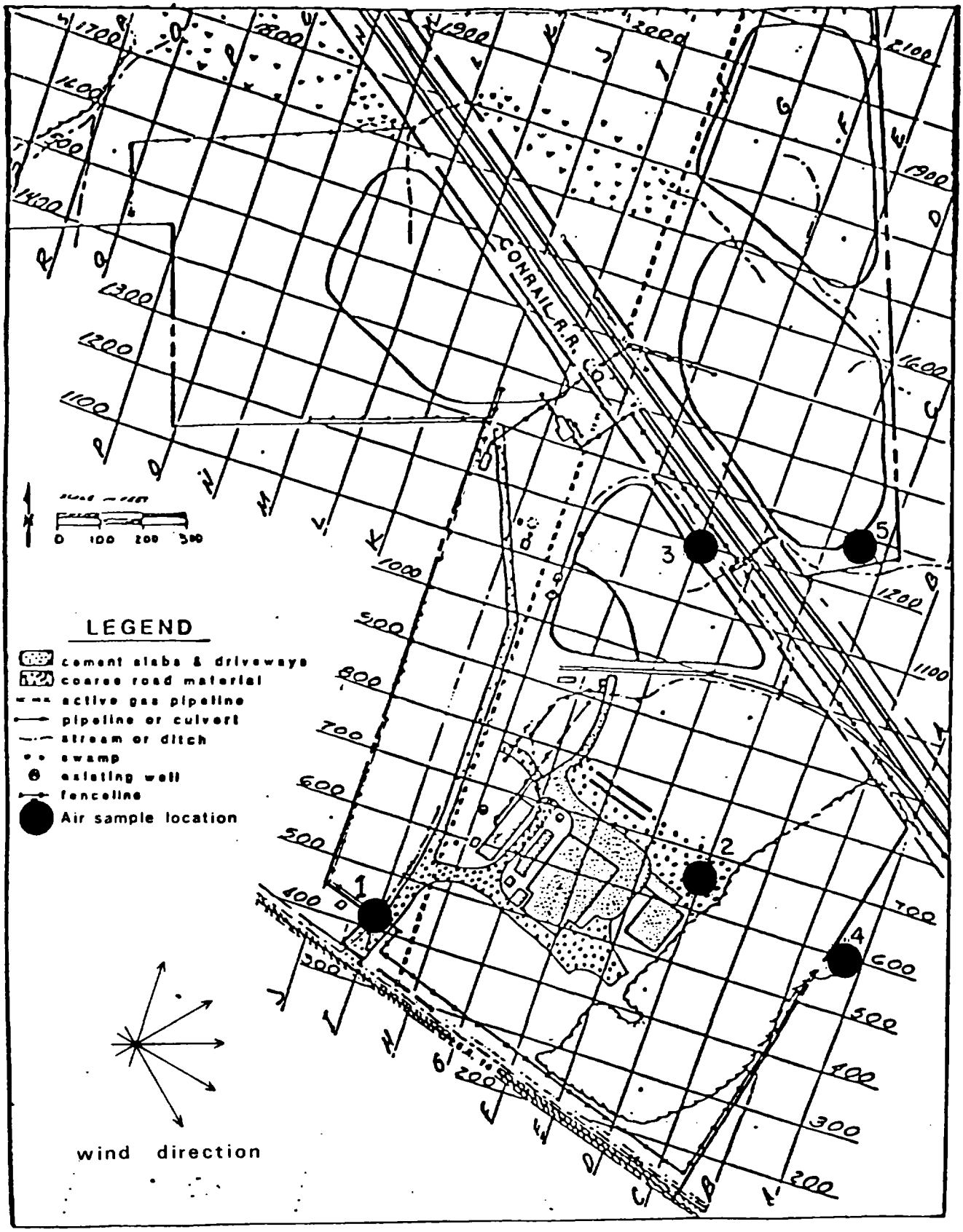

FIGURE 2

ORGANIC VAPOR SAMPLE LOCATIONS 10/27/82

MIREX/KEPONE AIR ANALYSIS RESULTS
NEASE CHEMICAL - TDD #R5-8209-2
10/26/82

Sample Number	Sample Location	Sample Volume	Sample Duration	Airborne Concentration - ug/m Mirex	Kepone
#1-P	Downwind	1428L(1)	476 min.	(2)ND (0.2 ug/m^3)	ND (0.2 ug/m^3)
#2-P	Upwind	1254L	418 min.	ND (0.2 ug/m^3)	ND (0.2 ug/m^3)
#3-P	Downwind	1224L	408 min.	ND (0.2 ug/m^3)	ND (0.2 ug/m^3)
#4-P	Downwind	1230L	410 min.	ND (0.2 ug/m^3)	ND (0.2 ug/m^3)
#5-P	Midsite	1290L	430 min.	ND (0.2 ug/m^3)	ND (0.2 ug/m^3)
Blank-P	-	-	-	ND (0.2 ug)	ND (0.2 ug)

1. L = Liters

2. ND = None Detected, < detection limit (0.2 ug/m^3)

AIRBORNE ORGANIC VAPOR ANALYSIS
NEASE CHEMICAL - TDD #R5-8209-2
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Sample Number: Blank 2-0
Sample Location: Midsite
Sample Volume: 39188 Cubic Centimeters
Sample Duration: 404 min.

COMPOUND NAME	AMOUNT	UNITS	CONFIDENCE
PENTANES (C5 SATURATED HYDROCARBONS)	2.3	ppb	2
BENZENE	0.8	ppb	1
PENTANAL	0.8	ppb	1-2
HEXANE (C6 SATURATED HYDROCARBONS)	0.6	ppb	2
HEXANAL	1.6	ppb	1
PERCHLOROETHYLENE	0.4	ppb	1
HEPTANAL	1.3	ppb	1
OCTANAL	1.8	ppb	1
DICHLOROBENZENE	1.6	ppb	1
NONANAL	4.4	ppb	1
C9 SATURATED HYDROCARBONS	0.5	ppb	2

DETECTION LIMIT: 0. 5ug/m3

COMMENT: *ELEVATED DETECTION LIMIT DUE TO PRESENCE OF COMPOUND IN BLANK.

Confidence Numbers reflect certainty of library search results. 1 = Very High, 2 = High, 3 = Match close enough to warrant reporting, 4 = No library match. Mass Spectrum interpreted according to standard reference methods.

AIRBORNE ORGANIC VAPOR ANALYSIS
NEASE CHEMICAL - TDD #R5-8209-2
10/26/82

Sample Number: Blank 3-0
Sample Location: Downwind
Sample Volume: 36450 Cubic Centimeters
Sample Duration: 405 min.

COMPOUND NAME	AMOUNT	UNITS	CONFIDENCE
ACETONE	37	ppb	2
C5 SATURATED HYDROCARBONS	3.3	ppb	2
BENZENE	0.6	ppb	1
PENTANAL	1.1	ppb	2
FORMIC ACID BUTYL ESTER	0.3	ppb	2
HEXANE	0.5	ppb	2
HEXANAL	1.9	ppb	1
PERCHLOROETHYLENE	ND (0.2) *	ppb	1
HEPTANAL	1.7	ppb	1
OCTANAL	1.9	ppb	1
C9 SATURATED HYDROCARBONS	0.4	ppb	2
NONANAL	5.0	ppb	1

DETECTION LIMIT: 0. 5ug/m3

COMMENT: *ELEVATED DETECTION LIMIT DUE TO PRESENCE OF COMPOUND IN BLANK.

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AIRBORNE ORGANIC VAPOR ANALYSIS
NEASE CHEMICAL - TDD #R5-8209-2
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Sample Number: Blank 5-0
Sample Location: Downwind
Sample Volume: 35490 Cubic Centimeters
Sample Duration: 390 min.

COMPOUND NAME	AMOUNT	UNITS	CONFIDENCE
DICHLORODIFLUOROMETHANE	0.1	ppb	1
C5 SATURATED HYDROCARBONS	1.6	ppb	2
BENZENE	0.3	ppb	1
PENTANAL	0.7	ppb	2
HEXANAL	0.8	ppb	1
PERCHLOROETHYLENE	ND (0.2) *	ppb	1
HEPTANAL	0.8	ppb	1
OCTANAL	0.9	ppb	1
C9 SATURATED HYDROCARBON	0.1	ppb	2
NONANAL	1.5	ppb	1

DETECTION LIMIT: 0. 6ug/m3

COMMENT: *ELEVATED DETECTION LIMIT DUE TO PRESENCE OF COMPOUND IN BLANK.

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AIRBORNE ORGANIC VAPOR ANALYSIS
NEASE CHEMICAL - TDD #R5-8209-2
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Sample Number: Blank 4-0
Sample Location: Downwind
Sample Volume: 39402 Cubic Centimeters
Sample Duration: 398 min.

COMPOUND NAME	AMOUNT	UNITS	CONFIDENCE
DICHLORODIFLUOROMETHANE	0.1	ppb	1
C5 SATURATED HYDROCARBONS	1.8	ppb	2
BENZENE	0.5	ppb	1
PENTANAL	0.4	ppb	2
HEXANE	0.6	ppb	2
HEXANAL	0.4	ppb	1
PERCHLOROETHYLENE	ND (0.1) *	ppb	1
HEPTANAL	0.6	ppb	1
OCTANAL	0.6	ppb	1
C9 SATURATED HYDROCARBON	0.2	ppb	2
NONANAL	1.0	ppb	1

DETECTION LIMIT: 0. 5ug/m3

COMMENT: *ELEVATED DETECTION LIMIT DUE TO PRESENCE OF COMPOUND IN BLANK.

Confidence Numbers reflect certainty of library search results. 1 = Very High, 2 = High, 3 = Match close enough to warrant reporting, 4 = No library match. Mass Spectrum interpreted according to standard reference methods.

AIRBORNE ORGANIC VAPOR ANALYSIS
NEASE CHEMICAL - TDD #R5-8209-2
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Sample Number: Blank 1-0
Sample Location: Upwind
Sample Volume: 38700 Cubic Centimeters
Sample Duration: 430 min.

COMPOUND NAME	AMOUNT	UNITS	CONFIDENCE
BENZENE	0.4	ppb	1
PENTANAL	1.0	ppb	2
HEXANAL	1.3	ppb	2
HEPTANAL	1.2	ppb	1
OCTANAL	1.7	ppb	1
NONANAL	3.6	ppb	1
C8 SATURATED HYDROCARBON	0.3	ppb	2
C5 SATURATED HYDROCARBON	2.2	ppb	2
C6 SATURATED HYDROCARBON	0.9	ppb	2

DETECTION LIMIT: 0. 5ug/m3

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AIRBORNE ORGANIC VAPOR ANALYSIS
NEASE CHEMICAL - TDD #R5-8209-2
10/26/82

Sample Number: Blank - 0
Sample Location: -
Sample Volume: -
Sample Duration: -

COMPOUND NAME	AMOUNT	UNITS	CONFIDENCE
METHYLENE CHLORIDE	27	ng	1
ACETONE	600	ng	1
CARBON DISULFIDE	22	ng	2
ETHANAL, 1-BUTENE	36	ng	2
2-BUTANONE	15	ng	2
4-METHYL-1-PENTENE	69	ng	1
METHYL CYCLOHEXANE	123	ng	1
C7 SATURATED HYDROCARBONS	590	ng	2
ETHYL CYCLOPENTANE	20	ng	1
TOLUENE	330	ng	1
C8 SATURATED HYDROCARBONS	54	ng	2
PENTACHLOROETHANE	71	ng	3
BENZALDEHYDE	59	ng	1
C2-BENZENES	27	ng	1
C3-BENZENES	36	ng	2
DICHLOROBENZENE	34	ng	1
C4-BENZENES	68	ng	2
HEXANE	21	ng	2
PERCHLOROETHYLENE	19	ng	1

DETECTION LIMIT: 10 ng

Confidence Numbers reflect certainty of library search results. 1 = Very High, 2 = High, 3 = Match close enough to warrant reporting. 4 = No library match. Mass Spectrum interpreted according to standard reference methods.